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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,195	09/29/2006	Masahiko Ishida	09780001AA	4374

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EXAMINER	
HOU, MICHELLE M	

ART UNIT	PAPER NUMBER
4181	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,195	ISHIDA ET AL.	
	Examiner	Art Unit	
	MICHELLE HOU	4181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/25/08*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *18-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/22/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

1 . The elected claims 1-23 are presented for examination. Claim 18-23 are non-elected claims and are withdrawn from further consideration. The following rejections are made.

Election Acknowledged

2. Applicant's election without traverse the invention group I of claims 1-17 filed 12/5/08 is acknowledged. It is to be noted that applicants elected the invention without traverse, thus they can not provide any arguments against this restriction. However, it is to be noted that restriction practice between the inventions is deemed to be proper as evidenced by reviewing prior art which teaches that the claimed technical feature is known in the art. For example, a review of Hikata (US20070224107 A1, p1, col1[0002] and col2 [0008], makes clear that the inventions of the groups I-III lack the same or corresponding special technical feature(i.e carbon nanotube structure) because the cited reference(s) appear to demonstrate that the claimed technical feature does not define a contribution which each of the inventions, considered as a whole, makes over the prior art, see PCT Rule 13.1 and PCT Rule 13.2. Unity exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding claimed special technical features.

For the aforementioned reason, the requirement is still deemed proper since the inventions of groups I-III lack unity and thus, made FINAL.

Information Disclosure Statement

3. The information disclosure statements (IDS) has been submitted on March 22, 2006 and has been considered. An Initialized copy has been attached hereto.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1, 2, 5, 6, 7 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Takai (US20050275331).

Regarding applicant's claim 1, Takai discloses a method of producing a carbon nanotube. The field emission device comprises a substrate, a porous top layer positioned on said substrate a catalyst material positioned (moving) on said layer and a cathode positioned on said catalyst material, said cathode including a bundle of carbon nanotubes (crystalline) which have been subjected to treatment described above. (Takai, p.1,col2, [0012],[0014]).

Regarding applicant's claim 2, Takai discloses carbon nanotube may be deposited onto substrate to form the cathode (crystalline) structure (Takai, p.1, col.2 [0012]).

Regarding applicant's claim 5, Takai discloses a carbon structure prepared by a chemical vapor transport deposition method of using a charged particle beam as excitation source (Takai, p.2, col.1, [0018]).

Regarding applicant's claim 6, Takai discloses said carbon structure is prepared by a chemical vapor transport deposition method and using a hydrocarbon as precursor material (Takai, p.1, col.2, [0018]).

Regarding applicant's claim 7, Takai discloses carbon structure is a resist pattern as a metal film (Takai, p.1, col.2, [0015]).

Regarding applicant's claim 16, Takai discloses a source/drain(sink) electrode, cathode/anode and gate electrode after forming a carbon nanotube structure (Takai, p.1,col2, [0016]

6. Claim 10, 13, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Takai (US20050275331).

Regarding applicant's claim 10, Takai discloses a method of producing a carbon nanotube and preparing a substrate.--a dielectric film , a metal film, a spacer to separate carbon structure from surface of substrate, a transparent electrode separated film by spacer, a transparent electrode, a second substrate, and a power supply. A catalyst material positioned to move on said layer and a cathode positioned on said catalyst material said cathode including a bundle of carbon nanotubes. The carbon nanotubes may form the cathode (crystalline) or may be deposited

onto a substrate to form the cathode (Takai, p.1, col.2, [0015], [0014], [0012].

Regarding applicant's claim 13, Takai discloses carbon structure is formed by a chemical vapor phase transport deposition method of using a charged particle beam excitation source (Takai, p.2, col.1, [0018]).

Regarding applicant's claim 14, Takai discloses carbon structure prepared by chemical vapor transport deposition method using hydrocarbon compound (Takai, p.1, col.2, [0018]).

Regarding applicant's claim 15, Takai discloses the carbon structure is a resist pattern metal film (Takai, p.1, col.2, [0015]).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness

9. Claim 3, 4, 8, 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takai (US20050275331 A1) as applied above and further in view of Ota (US 20050245390 A1).

Regarding applicant claim 3, Takai however does not disclose when the carbon structure is heated when the catalyst is in the carbon structure.

Ota does however disclose the carbon structure heated to 2000C when the catalyst is in the carbon structure (Ota, p.1, col.2, [0015]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention filed to take Takai's teaching in view of Ota to arrive at the same invention of instant applicant claims because Ota clearly suggested the deficiency of Takai's teaching.

One would have been motivated to make such modification because the said modification provides process benefits because the process efficiency of the vapor grown carbon fiber subjected to a thermal treatment at a temperature of 2000C enables the production method for the catalyst carrier. (Ota, p.1, col.2, [0015]).

Regarding applicant's claim 4, Ota discloses catalyst metal is performed by a liquid phase (heating) reduction method (Ota, p.1, col.2, [0014]).

Regarding applicant's claim 8, Ota discloses the carbon structure linear structure length and said catalyst carrier moving (crushing) along carbon structure (Ota, p.1, col.2, [0009]).

Regarding applicant's claim 9, Takai discloses the catalyst particle diameter is 3 times large as the length of the diameter of the linear structure (Takai, p.1, col.2, [0017]).

Regarding applicant's claim 17, Ota discloses a method of producing a wiring (fiber) structure of carbon nanotube (Ota, p.1, col.2, [0011]-[0013]).

10. Claim 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takai (US20050275331 A1) as applied above and further in view of Ota (US 20050245390 A1).

Regarding applicant claim 11, Takai however does not disclose when the carbon structure is heated when the catalyst is in the carbon structure.

Ota does however disclose the carbon structure heated to 2000C when the catalyst is in the carbon structure (Ota, p.1, col.2, [0015]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention filed to take Takai's teaching in view of Ota to arrive at the same invention of instant applicant claims because Ota clearly suggested the deficiency of Takai's teaching.

One would have been motivated to make such modification because the said modification provides process benefits because the process efficiency of the vapor grown carbon fiber subjected to a thermal treatment at a temperature of 2000C enables the production method for the catalyst carrier. (Ota, p.1, col.2, [0015]).

Regarding applicant's claim 12, Ota discloses the catalyst is liquefied said carbon structure (Ota, p.1, col.2, [0014]).

Conclusion

11. Claims 1-17 are rejected.

Correspondence

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHELLE HOU whose telephone number is (571)270-5847. The examiner can normally be reached on Monday to Friday, 8AM EST to 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MICHAEL MARCHESCHI/
Primary Examiner, Art Unit 1793

M.H.